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10/595,975

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EXAMINER

SMITH, COURTNEY L

ART UNIT

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2835

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/595,975	<b>Applicant(s)</b> ISHIKAWA ET AL.	
	<b>Examiner</b> COURTNEY SMITH	<b>Art Unit</b> 2835	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-14, 18 and 20-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 9, 15, 24 and 25, are objected to because of the following informalities:

**Regarding Claim(s) 1, 9, 24-25;** 'a lower portion of a vibrator' is unclear since an upper portion of a vibrator is previously asserted, and thus the Examiner cannot ascertain if two separate vibrators are being asserted. Note: if separate vibrators are intended to be claimed then all dependent claim(s) shall refer to a specific vibrator.

**Regarding Claim 15;** 'the region' and 'the sound source' are unclear since neither a region and/or a sound source have not been previously asserted. **Regarding Claim 20;** 'a first vibrator'; and 'a second vibrator' are unclear since vibrator(s) are asserted in claim 1. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-2, 7-8, 13, 18, and 20-25,** are rejected under 35 U.S.C. 102(e) as being anticipated by **(Mukasa 2005/0121171)**.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

**Regarding Claim 1, Mukasa** discloses a gas ejector **(61-Fig. 18)** including at least one vibrator **(65a and/or 65b-Fig. 18)**, comprising: a plurality of ejecting sections **(respective nozzles--63a, 63b)** arranged to eject a pulsating gas flow **(pulsating gas flow---Detailed Description 0137)** such that sound waves generated by the vibration of an upper portion of a vibrator **(wherein 65a of upper chamber 62a generates a wave ejected out of 63a in reverse to a wave generated by lower portion ejected out of 63b)** and sound waves generated by a lower portion of a vibrator **(wherein 65b of lower chamber 62b generates a wave out of 63b in reverse to the wave generated by the upper portion)** have the same wave form but reversed phases such that the sound waves weaken each other upon ejection from the ejector **(reversed sound waves from the ejecting sections have a mirrored symmetry, as depicted by Fig.'s 3 & 18)**; and a first control unit which controls the frequency of the vibration of the vibrator **(Detailed Description 0197--wherein 73 and/or 77-Fig. 19 control frequency)**.

**Regarding Claim 2, Mukasa** discloses the gas ejector according to Claim 1, further

Art Unit: 2835

comprising second control unit for the amplitude of the vibrator (**Detailed Description 0197--wherein 72 and/or 76-Fig. 19 control amplitude**).

**Regarding Claim 7, Mukasa** discloses the already modified gas ejector according to Claim 2, wherein the vibrator has a surface extending substantially orthogonal to the direction of vibration thereof (**where Mukasa discloses an orthogonal surface, as depicted by Fig. 18**) when the area of the surface is not greater than 70,000 (mm<sup>2</sup>) (**70mm diameter and thus the area is below 70,000 (mm<sup>2</sup>)**), the first control unit controls the frequency to a value higher than 100 (Hz) (**frequency 200 Hz--Detailed Description 0208**), and the second control means controls the amplitude so as to be in the range from 1 (mm) to 3 (mm) (**amplitude between 1-3 mm--Detailed Description 0235**).

**Regarding Claim 8, Mukasa** discloses the gas ejector according to Claim 7, wherein the second control unit controls the amplitude so as to be in the range from 1.5 (mm) to 3 (mm) (**amplitude between 1.5-3 mm--Detailed Description 0235**).

**Regarding Claim 13, Mukasa** discloses the gas ejector according to Claim 2, wherein the vibrator has a surface extending substantially orthogonal to the direction of vibration thereof (**as depicted by Fig. 18**) wherein the vibrator has a surface extending substantially orthogonal to the direction of vibration thereof when the frequency driven by the first control unit (**as already set forth**), the amplitude driven by the second

Art Unit: 2835

control unit **(as already set forth)**, and the area of the surface are respectively defined by A (Hz), B (mm), and C (mm<sup>2</sup>), the value of A x B x C is given in the range from 100,000 (mm<sup>3</sup>/s) to 10,000,000 (mm<sup>3</sup>/s).

**Regarding Claim 18, Mukasa** discloses the gas ejector according to Claim 1, wherein the vibrator has an approximately symmetrical shape with respect to a plane extending orthogonal to the direction of vibration thereof **(as depicted by Fig. 18)**.

**Regarding Claim 20 , Mukasa** discloses the gas ejector according to Claim 1, wherein the vibrator includes a first vibrator **(as already set forth in claim 1)** having a surface extending orthogonal to the direction of vibration thereof and an asymmetrical shape with respect to the surface **(as depicted by Fig. 18)** and a second vibrator **(as already set forth in claim 1)** having substantially the same shape as that of the first vibrator and arranged so as to vibrate along substantially the same direction as but in an opposite direction to that of the first vibrator.

**Regarding Claim 21, Mukasa** discloses the gas ejector according to Claim 1, wherein the respective ejecting sections include a housing **(housing--otherwise depicted by 172-Fig. 27)** including a plurality of chambers partitioned by the vibrator such that the chambers adapted for ejecting the gas have substantially the same volume as each other **(as depicted by Fig. 27, respective chambers 172a, 172b are partitioned by vibrator 145)**.

**Regarding Claim 22 Mukasa** discloses the gas ejector according to Claim 1, wherein the respective ejecting sections include a housing (**housing--otherwise depicted by 172-Fig. 27**) including a plurality of chambers partitioned by the vibrator and adapted for ejecting the gas; and an actuator (**178**) arranged outside the housing and adapted for driving the vibrator.

**Regarding Claim 23, Mukasa** discloses the gas ejector according to Claim 22, wherein the housing has a bore section (**172e- Fig. 18**) extending from the outside thereof to at least one of the chambers, the gas ejector further comprising a rod (**185- Fig. 27**) extending through the bore section and fixed to the vibrator so as to move integrally with the actuator (**actuator 178-Fig. 27**), and a supporting member provided in the bore section so as to support the rod (**192-Fig. 27**).

**Regarding Claim 24, Mukasa** discloses an electronic device (**50-Fig. 4**) including at least one heater (**51-52**) and at least one vibrator (**65a and/or 65b-Fig. 18**),, comprising: a plurality of ejecting sections (**respective nozzles--63a, 63b**) arranged to eject a pulsating gas flow (**pulsating gas flow---Detailed Description 0137**) such that sound waves generated by the vibration of an upper portion of a vibrator (**wherein 65a of upper chamber 62a generates a wave ejected out of 63a in reverse to a wave generated by lower portion ejected out of 63b**) and sound waves generated by a lower portion of a vibrator (**wherein 65b of lower chamber 62b generates a wave out**

Art Unit: 2835

**of 63b in reverse to the wave generated by the upper portion)** have the same wave form but reversed phases such that the sound waves weaken each other upon ejection from the ejector **(reversed sound waves from the ejecting sections have a mirrored symmetry, as depicted by Fig.'s 3 & 18)**; and control means for controlling the frequency of the vibration of the vibrator **(Detailed Description 0197--wherein 73 and/or 77-Fig. 19 control frequency)**.

**Regarding Claim 25**, the method steps are necessitated by the already disclosed structure of Mukasa.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 11-12, and 14**, are rejected under 35 U.S.C. 103(a) as being unpatentable over **(Mukasa 2005/0121171)**.

**Regarding Claim 11**, Mukasa discloses the gas ejector according to Claim 1, **except**, explicitly wherein the vibrator has a surface extending substantially orthogonal to the direction of vibration thereof, and the area of the surface is in the range from 1,500 (mm<sup>2</sup>) to 70,000 (mm<sup>2</sup>). It would have been obvious to one having ordinary skill in the



Art Unit: 2835

art at the time the invention was made to vary the surface area in the range from 1,500 (mm<sup>2</sup>) to 70,000 (mm<sup>2</sup>) **to achieve to an effective frequency of the vibrator to increase the cooling effect while radiating heat** since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

**Regarding Claim 12, Mukasa** discloses the gas ejector according to Claim 11, **except**, explicitly wherein the area of the surface of the vibrator is greater than 2,000 (mm<sup>2</sup>). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the surface area of the vibrator is greater than 2,000 (mm<sup>2</sup>) **to achieve to an effective frequency of the vibrator to enhance the cooling effect while radiating heat** since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

**Regarding Claim 14, Mukasa** discloses the gas ejector according to Claim 13, **except** explicitly wherein the value of  $A \times B \times C$  is smaller than 200,000 (mm<sup>3</sup>/s). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to vary the value of  $A \times B \times C$  smaller than 200,000 (mm<sup>3</sup>/s) **to optimize frequencies and enhance the cooling effect**, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

6. **Claims 3-6**, are rejected under 35 U.S.C. 103(a) as being unpatentable over **(Mukasa 2005/0121171)** as applied to claim 1 above, in view of **(Ziada 5,798,465)**.

**Regarding Claims 3-4, Mukasa** discloses the gas ejector according to Claim 1, **except** explicitly disclosing wherein the vibrator has the lowest resonant frequency lower than 200 (Hz) or 150 (Hz). However, **Ziada** discloses wherein the vibrator has the lowest resonant frequency lower than 200 (Hz) or 150 (Hz) **(as set forth by col. 10, lines 21-28--wherein 50-100Hz is lower than 150 or 200 Hz)**. It would have been obvious to one having ordinary skill in the art at the time that the invention was made to provide the gas ejector of Mukasa with the vibrator frequency of Ziada in order to allow for enhanced damping of vibratory noise.

**Regarding Claims 5-6, Mukasa** discloses the gas ejector according to Claim 1, **except** explicitly disclosing wherein the first control unit controls frequency to a value higher than 100 (Hz) or 35 (Hz). However, **Ziada** discloses wherein a first control unit controls **(Col. 9, lines 46-65; wherein frequency analyzer for sensor signals control optimization of flow oscillations of 34-35-Fig. 3 on gas flow 10)** frequency to a value higher than 100 (Hz) or 35 (Hz) **(as set forth by col. 10, lines 20-28--wherein 150 Hz is higher than 35 Hz or 100 Hz)**. It would have been obvious to one having ordinary skill in the art at the time that the invention was made to provide the gas ejector of Mukasa with the vibrator frequencies of Ziada in order to allow for enhanced damping of vibratory noise.

***Allowable Subject Matter***

7. **Claims 9-10, 15-17, and 19**, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. **Regarding Claim 9**; wherein the vibrator has a surface extending substantially orthogonal to the direction of vibration thereof, and, when the area of the surface is not greater than 70,000 (mm<sup>2</sup>), the first control unit controls the frequency so as not to be higher than 35 (Hz), and the second control unit controls the amplitude so as to be in the range from 1 (mm) to 5 (mm).

**Regarding Claim 15**; wherein a thermal resistance of the region between a heater to which the gas ejected from the respective ejecting sections is supplied, and gas surrounding the heater is lower than 0.7 (K/W); and a noise level at a position about 1 (m) away from the sound source of the sound waves is lower than 30 dBA. **Regarding Claim 19**; wherein a thermal resistance of the region between a heater, to which the gas ejected from the respective ejecting sections, and gas surrounding the heater is lower than 0.5 (K/W); a noise level at a position about 1 (m) away from the sound source of the sound waves is lower than 30 (dBA); and an envelope volume containing the respective ejecting sections and the heater lower than 500 (cm<sup>3</sup>).

***Response to Arguments***

8. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

<b><i>US 5008582 A</i></b>	<b><i>Tanuma; Chiaki et al.</i></b>	<b><i>Fig.'s 2 &amp; 39</i></b>
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to COURTNEY SMITH whose telephone number is (571)272-9094. The examiner can normally be reached on M-F 7:30 am-5 pm (1st Fri. off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash Gandhi can be reached on 571-272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Art Unit: 2835

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. S./

Examiner, Art Unit 2835

/Jayprakash N Gandhi/

Supervisory Patent Examiner, Art Unit 2835